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The nomenclature of the royal palms

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In two previous discussions of botanical nomenclature* the royal palms and their relatives have served as instances of the prevailing taxonomic confusion. The West Indian species which in general practice for many years past have constituted the genus *Oreodoxa* are, in all probability, generically distinct from either of the two Venezuelan species placed under *Oreodoxa* when that genus was first described by Willdenow in 1804.† Detailed reasons for this view were included in a "Synopsis of the palms of Porto Rico,"‡ where a new royal palm found in that island was described under the name *Roystonea borinquena*. In a recent fascicle of the *Symbolae Antillanae*,§ the important work on West Indian botany now being issued by Professor Urban of Berlin, the royal palm of Porto Rico is admitted to be distinct from that of Cuba, but is given the name *Oreodoxa caribaea*.

Unsystematic methods of systematic study have resulted in endless nomenclatorial complications which should not be discussed, perhaps, outside technical monographs. The royal palms, however, are among the most conspicuous members of the vegetable world, and the errors which have been made in dealing with them are not without practical interest as samples of the confusion which could be avoided by adherence to the more simple and practical system of nomenclatorial procedure sometimes termed the "method of types."

Like many of his contemporaries, Martius, the great German palm specialist of the first half of the last century, largely disregarded the work of his predecessors, in the sense that he "emended" generic descriptions with the greatest freedom and did not hesitate to apply generic names to groups of species not

* The method of types in botanical nomenclature. *Science*, II. 12 : 475. 1900. Types and synonyms. *Science*, II. 15 : 648. 1902.

† *Mem. Acad. Roy. Berlin*, 1804 : 37. 1807.

‡ *Bull. Torrey Club*, 28 : 552. 1901.

§ Dammer, U., and Urban, I. *Palmae. Symbolae Antillanae*, 4 : 126. 1903.

related to those for which they were originally proposed. Martius seems to have had no personal acquaintance with either of Willdenow's two original species of *Oreodoxa* from Venezuela. The first he left nominally in the genus and the second he referred to *Iriarteia*, but the centre of gravity, as it were, was shifted to the West Indian species unknown to Willdenow. Wendland, whose knowledge of the palms of the Caribbean region advanced far beyond that of Martius, did not show any corresponding improvement of nomenclatorial policy. He completed the removal of both the original species from *Oreodoxa*, assigning the first (*O. acuminata*) to *Euterpe*, and the second (*O. praemorsa*) to a new genus *Catoblastus*, leaving the West Indian royal palms in full possession of the name *Oreodoxa*, though with no defensible title. There seems to be no reason for setting aside Wendland's opinion that *O. acuminata* is a *Euterpe* rather than an *Oreodoxa*, in the Martian sense, but the name *Euterpe* is not available for any American palm,* and a new name would be required for the group to which *O. acuminata* belongs unless *Oreodoxa* be restored to its original place in the system.

Messrs. Dammer and Urban rejected Wendland's idea of the affinities of *Oreodoxa acuminata* and consider it congeneric with the West Indian royal palms because seedlings supposed to belong to *O. acuminata* † have the primary leaves of the germinating plant simple and entire, while those which follow have the apex bifid and long-produced. It is not explained why similarities of the seedlings should be supposed to cancel differences of the adult palm, and such an argument would prove too much in the present case, because *Acrista*, and probably several other genera, related and unrelated, have primary leaves of the character described.

Generic diagnoses of palms have commonly taken into account only floral characters. Perhaps the use of the seedlings may lead in time to an appreciation of other vegetative features. The cespitose, "stoloniferous" habit of *Oreodoxa acuminata*, for example, furnishes as important evidence of relationship as the seedling, and this supports the association of the type of *Oreodoxa*

* See page 351.

† No indication of the origin of these seedlings is given, nor of the manner in which they were specifically identified as belonging to *Oreodoxa acuminata*.

with the many other slender cespitose "stoloniferous" "*Euterpe*" palms of the South American continent, rather than with any of the insular types. This indication of alliance is strengthened, moreover, by the remainder of Willdenow's description, especially the tripartite style and globose longitudinally sulcate seed. The gamosepalous calyx, and the large woody spathe, are also characters of the related continental genus *Oenocarpus*. Kunth described in 1815 additional species of *Oreodoxa* from Colombia (*O. Sancona* and *O. frigida*) with a tubular three-lobed calyx and three styles, so that these characters of *Oreodoxa* can scarcely be ignored as errors on the part of Willdenow.

The genus *Roystonea*, to which the West Indian royal palms belong, is unique in the possession of a spherical or ovoid rudimentary pistil in the staminate flowers, while all the other related genera retain the more primitive character of a conical or columnar pistillode three-lobed at the apex. According to Willdenow and Kunth the true *Oreodoxa* of the mountains of South America is peculiar in having the flowers bisexual, which would represent a still more backward stage of development. If these authorities were in error they were deceived, evidently, by large three-styled pistillodes of the staminate flowers which would, however, be even more significant of the probability that the affinities of *Oreodoxa* do not lie with *Roystonea*, whatever be its relationships with *Oenocarpus* and other continental genera.

There are thus many indications favoring, and none opposing, the opinion of Wendland, that *Oreodoxa acuminata* is a "*Euterpe*," or, to speak with more nomenclatorial circumspection, that it is a genus of the considerable series of American palms to which the name *Euterpe* was applied by Martius, Wendland, and others. It would, in other words, have been more nearly correct to have applied the name *Oreodoxa* to the mountain palm of Porto Rico (*Acrista*) than to have made it supplant *Roystonea*, *Acrista* being obviously nearer to the cespitose continental species of "*Euterpe*" than are the robust and otherwise rather specialized royal palms.

The use of the name *Euterpe* in the above discussion is an apparently necessary concession to history, though an unfortunate one, since it has been shown elsewhere that *Euterpe* has no true place in American botany, having been proposed originally for an

unrelated East Indian palm.* In *Die natürlichen Pflanzenfamilien*, Professor Drude recognizes six genera of American palms of the group in which *Euterpe* and *Oreodoxa* are placed, though he distributes them among three separate series of Old World genera, from the Malay region and the islands of the Pacific and Indian Oceans. They seem, however, to constitute a compact natural group, as coherent in their characters as they are in their geographical distribution, and worthy of taxonomic recognition as a distinct tribe.

The genera of the tribe *Acristeae* may be separated by the following diagnostic characters :

1. Staminate flowers with spherical or ovoid pistillodes and sessile stigmas ; pistillate flowers with staminodes united into a six-toothed cup. Genus ROYSTONEA Cook ; type, *R. regia* (H. B. K.) Cook, Cuba.
Staminate flowers with conical or columnar pistillodes 3-parted at apex ; stamens and staminodes free. 2.
2. Ripe fruit with stigma-scar basal. Genus HYOSPATHE, Martius ; type, *H. elegans* Martius, Brazil.
Ripe fruit with stigma-scar lateral or apical. 3.
3. Leaves pinnately divided below, entire above, ending in a large simple bifurcate blade. Genus PRESTOEIA Hook. f. ; type, *P. pubigera* (Griseb. & Wendl.) Hook. f., Trinidad.
Leaves divided throughout into equal or graded narrow pinnae. 4.
4. Stamens 9-20 ; inflorescence interfoliar. Genus JESSENIA, Karsten ; type, *J. polycarpa* Karsten, Brazil.
Stamens 6 ; inflorescence distinctly infrafoliar. 5.
5. Internodes short, leaf-bases not long-sheathing. Genus OENOCARPUS Martius ; type, *O. distichus* Martius, Brazil.
Internodes long, leaves with long sheathing bases. 6.
6. Calyx of staminate (or bisexual?) flowers with sepals united at base. Genus OREODOXA Willd. ; type, *O. acuminata* Willd., Venezuela.
Calyx with three distinct broadly imbricate sepals. 7.
7. Trunk attenuate, increasing in thickness with age ; spathes ensiform, flat ; branches of spadix subtended by large spathe-like bracts ; seeds with uniform albumen. Genus PLECTIS ; † type, *P. Oweniana* sp. nov., Guatemala.

* Bull. Torrey Club, 28 : 556. 1901.

† *Plectis* gen. nov.

Trunk solitary, very tall, slender and tapering, the diameter increasing with age.

Leaves long-sheathing at base ; petiole short ; pinnae very numerous, narrowly linear, horizontal or drooping.

Spathes numerous, coriaceous, but thin and flexible ; outer spathes short ; two long ensiform complete spathes ; a large lanceolate-ligulate incomplete spathe subtending the lowest branch of the spadix ; a small ligulate spathe or bract subtends each of the other branches.

Trunk columnar ; spathes fusiform or subcylindric ; branches of spadix with bracts rudimentary or wanting ; seed deeply ruminatc. 8.

8. Stigma of ripe fruit lateral ; embryo basal ; solitary, not stoloniferous. Genus ACRISTA Cook ; type, *A. monticola* Cook, Porto Rico.

Stigma of ripe fruit subapical ; embryo lateral ; stoloniferous, cespitose. Genus CATIS Cook ; type, *C. Martiana* Cook (*Euterpe oleracea* Martius), Brazil.

A similar history of nomenclatorial lawlessness is concealed behind the exclamation point of certainty with which Messrs. Dammer and Urban associate the specific name *caribaea* and the royal palm of Porto Rico. Jacquin described from the Carib Islands in 1763 an *Areca oleracea*, which Martius assigned to the genus *Euterpe*, but he disregarded the priority of Jacquin's specific name *oleracea* and made a new *Euterpe oleracea* of his own from Brazil. When Sprengel undertook the revision of Linnaeus' *Systema Vegetabilium*, published in 1825, he found both these *oleracea* species claiming entry under *Euterpe*, and renamed Jacquin's plant *Euterpe caribaea*. Martius himself placed *Euterpe caribaea* Sprengel as a synonym under *Oreodoxa oleracea* in the third volume of his *Historia Naturalis Palmarum* (page 166), after he had come to look upon the royal palms as generically distinct from *Euterpe*.

It seems certain, moreover, that Sprengel and Martius were dealing with a single palm. How Messrs. Dammer and Urban have brought the two species into the *oleracea-caribaea* complication appears utterly mysterious, unless it be that they have disre-

Fruits small, subglobose, with a very prominent subapical stigmatic scar ; pericarp thin, firmly fleshy ; a layer of coalesced fibres adhering to the smooth seed ; albumen uniform ; embryo basal.

Plectis Oweniana sp. nov.

Trunk smooth, ringed with leaf-scars, 25 meters and upwards ; diameter at base 25-30 cm. ; at apex 10 cm. or less ; supported on a conical mass of thick roots with large fibrous root-caps.

Leaf-sheaths over 150 cm. long ; petiole 37-47 cm. long by 2.7 wide at apex ; rachis 267 cm. tapering more or less and produced into a slender fiber as long as the terminal pinnae ; total length of leaf 481 cm., basal pinnae 67 cm. by 1.1 cm., middle pinnae 81-93 cm. by 3.5 cm., terminal pinnae 37 cm. by 1.2 cm. or less, generally split with age into narrow grass-like shreds 5 mm. or less in width. Upper surface of rachis flat at base but gradually narrowed upward, the cross-section becoming subtriangular.

Habitat : steep slopes and summits of mountains in the vicinity of Senahu, Alta Vera Paz, Guatemala, at an elevation of 600-900 meters. It is said not to occur in the Coban district further west.

Native name in the Kekchi language "*halaute*" ; also called "*ternera*" by the Iadino population of Alta Vera Paz.

garded the above history and relied entirely upon the finding in Sprengel's herbarium of a specimen of the Porto Rican royal palm erroneously identified as *Euterpe caribaea*.^{*} They do not, however, give any reason for believing that Sprengel had this specimen in hand or in mind while revising the *Systema*, and there are several points of internal evidence which forbid such a supposition. The name *caribaea* was not proposed for a new species; the name for which it was substituted being given at the end of the description "*(Areca oleracea* Jacq.)." There is no mention of Porto Rico, the only locality given being that of Jacquin, "*Ins. Carib.*" a term which seems not to have included Porto Rico, Jamaica and the other larger Antilles, which were frequently mentioned by name. Sprengel shows care and discrimination in the indication of localities, and wrote "*Ind. occ.*" and "*Ins. Antill. minor*" when plants were known from different islands of the West Indies. Finally the description of *Euterpe caribaea* definitely excludes the royal palm of Porto Rico by stating that the fruit is somewhat curved, "*fructibus oblongis subincurvis*," a peculiarity mentioned by Jacquin in the same words, and known to exist only in the royal palm of the southern islands of the lesser Antilles.[†]

With these facts in view it seems apparent that the discovery of Sprengel's mislabeled specimen does not bring his *Euterpe caribaea* any nearer to Porto Rico than before, nor does it alter three-quarters of a century of botanical history in which this name has remained in oblivion as a synonym of *Oreodoxa oleracea*, a period of disuse which under a consistent application of the Berlin fifty year rule would have rendered its resuscitation impossible, whatever its original merits.

^{*} The Caribbean royal palm, *Roystonea oleracea*, formerly called *Oreodoxa oleracea*, has been reported from Porto Rico more than once, but its occurrence is not authenticated. The Porto Rican specimens distributed from Berlin as *Oreodoxa oleracea* (Sintenis no. 1525), stated to have been identified by Professor Drude, do not belong to this genus, but represent *Acrista monticola*.

[†] Some botanists may hold that Sprengel should be followed in changing the name of Jacquin's *oleracea*, on the ground that the Brazilian *oleracea* of Martius had priority as a species of *Euterpe*, but if the name *caribaea* is to be taken away from Jacquin's *oleracea* of the Carib Islands and used for the royal palm of Porto Rico (to supplant *borinquena*), it is evident that the older and more southern species would still be in need of a name, so that even the motive of economy is lacking as a justification for the arbitrary change proposed at Berlin.

The few readers, if any, who may have had the curiosity to follow along this barren path of unnecessary error may be the better able at least, to understand why systematic study has come to be looked upon, more and more, as an unproductive part of the biological field. The history of the nomenclatorial vicissitudes of the royal palm is no unique instance, and is not brought forward as an indication of any special carelessness or perversity on the part of Professor Urban or Dr. Dammer. It is a fair and typical example of the taxonomic methods, or lack of methods, which still render much of the systematic work of even the larger botanical centers a waste of the time, not merely of the specialists now writing, but also of their successors who must some time unravel the skeins so industriously tangled. The method of types, requiring the fixed and definite application of names, is as essential for taxonomy as the multiplication table for mathematics, dates for history, or latitude and longitude for geography. It is so axiomatic, indeed, that it escaped formulation by DeCandolle and other eminent taxonomists, and is evidently still unconsidered by European botanists. The recent announcement of a botanical congress, to be held in Vienna in 1905, provides that all proposals of nomenclatorial reform must be based on DeCandolle's Paris Code of 1867. The method of types is more fundamental however, than anything in the Paris Code, and once admitted to the serious consideration of taxonomic workers is soon found to justify a thorough recasting of nomenclatorial legislation. This task is already well advanced in America, though not yet entered upon by our trans-Atlantic colleagues.

The present vast confusion of names and methods has tended, no doubt, to discourage the entrance into systematic biology of those who appreciate that life is short, and that names and classifications are not the final objects of scientific study. Nevertheless, the fact that nine tenths of the difficulties of formal nomenclature can be permanently removed by consistent adherence to a few simple rules will have its effect in time, and biological taxonomy may ultimately serve its original purpose of rendering nature and science more accessible, instead of artificially multiplying labor and confusion.